

WHAT IS CLAIMED IS:

1. A method of irradiating an article from a radiation source where the article absorbs the radiation at different positions in the article in accordance with irregularities in the characteristics of the article at the different positions, including the steps of:

providing the radiation from the source in a particular direction,

absorbing the radiation energy passing from the source to the article at the different positions in accordance with the irregularities in the characteristic of the article at the different positions to maintain the radiation dosage at the different positions in the article within particular minimum and maximum limits, and

moving the article past the radiation from the source in a direction transverse to the particular direction.

2. A method as set forth in claim 1 wherein

the absorption is provided by a fixture having characteristics for absorbing the radiation energy at the different positions depending upon the irregularities in the characteristics of the article at the different positions.

3. A method as set forth in claim 2 wherein

the article is moved past the radiation from the source in a direction substantially perpendicular to the particular direction and wherein

the article has an irregular configuration and the fixture has a configuration which,

when combined with the configuration of the article, provides a regular configuration.

4. A method of irradiating an article from a radiation source where the article absorbs the radiation from the source at different positions in the article in accordance with irregularities in the characteristics of the article at the different positions, including the steps of:

providing radiation from the source in a particular direction,
moving the article past the radiation from the source in a second direction transverse to the particular direction, and

providing for the absorption of the radiation energy from the source within particular minimum and maximum limits at the different positions in the article regardless of the irregularities in the characteristics of the article at the different positions.

5. A method as set forth in claim 4 wherein
the absorption of the radiation energy from the source within the particular
minimum and maximum limits is controlled by a fixture having irregularities
complementary at the different positions to the irregularities provided by the article at the
5 different positions.

6. A method as set forth in claim 4 wherein
the article is conveyed past the radiation source in a direction substantially
perpendicular to the particular direction and at a substantially constant speed.

7. A method of irradiating an article from a irradiation source where the article
absorbs the irradiation from the source at different positions in the article in accordance
with irregularities in the characteristics of the article at the different positions, including
the steps of:

5 providing radiation from the article in a particular direction,
moving the article past the radiation from the source in a second direction
substantially perpendicular to the particular direction; and

compensating for the irregularities in the characteristics of the article at the different positions in the article to provide a uniformity in the radiation dosage at the different positions in the article within particular minimum and maximum limits.

8. A method as set forth in claim 7 wherein the irregularities in the article at the different positions result from irregularities in the dimension of the article in the particular direction at the different positions and wherein the compensation is provided for the irregularities in the dimension of the article in the particular direction at the different positions.

9. A method as set forth in claim 8 wherein the article is conveyed past the radiation from the source in a direction substantially perpendicular to the particular dimension.

10. A method of irradiating an article from a radiation source where the article has irregular characteristics including an irregular shape and absorbs radiation passing through the article by an amount depending upon the characteristics, including the

irregular geometrical shape, of the article and where the article has different radiation
5 absorption characteristics at progressive positions in the article, including the steps of:

providing the radiation from the radiation source in a first direction,

providing a fixture having irregular characteristics, including an irregular
geometric shape, at progressive positions to compensate for the differences in the
irregularities of the characteristics, including irregularities in the geometric shape, of the
10 article at the progressive positions,

disposing the fixture relative to the article to provide the combination of the article
and the fixture with the compensating characteristics at the progressive positions in
response to the radiation, and

moving the combination of the article and the fixture at the progressive positions
15 past the radiation source to irradiate the article at the progressive positions.

11. A method as set forth in claim 10 wherein

the fixture has irregular characteristics at progressive positions dependent upon the
irregularities in the characteristics of the articles at the progressive positions.

12. A method as set forth in claim 10 wherein

the combination of the article and the fixture is moved past the radiation from the radiation source at a substantially constant speed in a direction substantially perpendicular to the direction of the radiation.

13. A method as set forth in claim 10 wherein

the fixture is made from a material selected from a group consisting of a plastic and a metal and having characteristics of responding to the radiation substantially corresponding to the characteristics of the article in responding to the radiation.

14. A method of irradiating an article from a radiation source where the article has characteristics of absorbing at progressive positions different amounts of radiation per unit of distance of travel of radiation through the article, including the steps of:

providing radiation in a particular direction from the source,

providing a fixture having characteristics of absorbing at the progressive positions in the fixture different amounts of radiation per unit of distance of travel of the radiation through the fixture, the different amounts of the absorbed radiation per unit of distance of the travel for the fixture corresponding to the different amounts of the absorbed radiation

per unit of distance of travel for the article to maintain within particular minimum and
10 maximum limits at the progressive positions the radiation dosage received by the article
per unit of travel of the radiation through the article,

disposing the fixture relative to the article to maintain within particular limits at
the progressive positions the radiation dosage absorbed by the article per unit of distance
of travel of the radiation through the article, and

15 moving the combination of the article and the fixture at the
progressive positions past the radiation from the radiation source to absorb the radiation
from the source at the progressive positions.

15 15. A method as set forth in claim 13 wherein

the combination of the article and the fixture is moved past the radiation from the
radiation source at a substantially constant speed in a direction substantially perpendicular
to the direction of the radiation from the source.

16. A method as set forth in claim 15 wherein

a plurality of articles and a plurality of fixtures are moved past the radiation from
the source and wherein,

each of the articles and each of the associated fixtures is spaced from the adjacent
5 articles and the adjacent fixtures by a particular distance within particular limits when the
articles and the associated fixtures are moved past the radiation from the source.

17. A method of irradiating an article from a radiation source where the article
absorbs radiation passing through the article by an amount depending upon the
characteristics, including the geometric shape, of the article and where the article has
different radiation absorption characteristics at progressive positions in the article,
5 including the steps of:

providing the radiation from the radiation source in a first direction,

providing a fixture having at the progressive positions characteristics, including a
geometric shape, constituting a difference between substantially constant characteristics
and the characteristics of the article at the progressive positions,

10 disposing the fixture relative to the article to provide the substantially constant
characteristics for the combination of the article and the fixture at the progressive
positions, and

moving the combination of the article and the fixture past the radiation from the
source at the progressive positions.

18. A method as set forth in claim 17 wherein

the article has irregularities in the dimension of the article in the first direction at the progressive positions and wherein

the fixture has irregularities in the dimension of the fixture in the first direction at

5 the progressive positions to provide a substantially constant dimension in the first direction at the progressive positions when the dimensions of the article and the fixture in the first direction at the progressive positions are combined.

19. A method as set forth in claim 17 wherein

the progressive positions in the article and the fixture are in a direction substantially perpendicular to the first direction.

20. A method of irradiating an article from a radiation source where the article

absorbs radiation passing through the article by a dosage depending upon the characteristics, including the geometric shape, of the article and where the article has different radiation absorption characteristics at progressive positions in the article,

5 including the steps of:

providing the radiation from the radiation source in a first direction,

providing a fixture with characteristics of absorbing the radiation corresponding to the absorption characteristics of the article in accordance with a difference between a substantially constant absorption and the absorption of the radiation by the article at the progressive positions,

disposing the fixture and the article relative to each other to provide a substantially constant absorption at the progressive positions of the combination of the article and the fixture, and

moving the combination of the article and the fixture past the radiation from the source in a direction substantially perpendicular to the first direction.

21. A method as set forth in claim 20 wherein

the characteristics in the article include the geometrical shape of the article and wherein the characteristics in the fixture include the geometrical shape of the fixture and wherein

the geometrical shape of the fixture provides the difference between the substantially constant characteristics and the irregularities in the geometrical shape of the article.

22. A method as set forth in claim 20 wherein

the fixture includes two (2) fixture portions respectively disposed on opposite sides of the article in the direction of the radiation from the source.

23. A method as set forth in claim 20 wherein

the fixture includes a single fixture having a geometrical shape providing the difference between a substantially constant geometric shape and the combination of the characteristics of the geometric shape of the article on the opposite sides of the article in the direction of the radiation from the source.

24. A method of irradiating in article from a radiation source where the article absorbs radiation by a dosage depending upon the characteristics of the article and where the article has different response characteristics to the radiation at progressive positions in the article, the absorption of the radiation in the article being dependent upon the composition and geometric shape of the article, including the steps of:

providing the radiation from the source in a particular direction,

providing a fixture having a composition with characteristics of absorbing the radiation corresponding to the absorption of the radiation by the composition of the article

and having at progressive positions a geometric shape compensating for the geometric
10 shape of the article,

disposing the fixture relative to the article to provide a substantially constant
geometric shape for the combination of the article and the fixture at progressive positions
on the article and the fixture, and

moving the combination of the article and the fixture past the radiation from the
15 source in a direction substantially perpendicular to the radiation from the article.

25. A method as set forth in claim 24 wherein
the article is provided with irregularities in its geometric shape and wherein
the fixture is provided with irregularities in its geometric shape and wherein
the irregularities in the geometric shape of the fixture are complementary with the
5 irregularities in the geometric shape of the article.

26. A method as set forth in claim 25 wherein
the irregularities in the geometric shape of the fixture are disposed on the opposite
sides of the article in the direction of the radiation from the source.

27. A method as set forth in claim 25 wherein

the irregularities in the geometric shape of the fixture are disposed on a single side of the article in the direction of the radiation from the source.

28. In combination,

a radiation source for providing radiation in a particular direction,

an article having irregularities in its characteristics at different positions in the article where the irregularities in the characteristics produce non-uniformities in the absorption provided by the article to the radiation from the source,

a fixture having characteristics of absorbing the radiation energy from the source at the different positions, relative to the irregularities in the radiation absorption by the article at the different positions, to provide a substantial uniformity in the radiation dosage at the different positions in the article within particular minimum and maximum limits, and

a conveyor for moving the article and the fixture past the radiation from the source in a direction substantially perpendicular to the particular direction.

29. In a combination as set forth in claim 28 wherein
the irregularities in the characteristics of the article include irregularities in the
geometrical shape of the article and wherein

the irregularities in the characteristics of the fixture include irregularities in the
5 geometrical shape of the fixture.

30. In a combination as set forth in claim 28 wherein
the combination of the irregularities in the geometrical shapes of the article and the
fixture provide substantially constant geometrical shapes within particular minimum and
maximum limits.

31. In combination,
a radiation source for providing radiation in a particular direction,
an article having irregularities in its characteristics at different positions in the
article where the irregularities in its characteristics affect the radiation dosage received by
5 the articles at the different positions from the radiation source,
a fixture having irregularities in its characteristics to compensate for the
irregularities in the characteristics of the article, and

a conveyor for moving the article and the fixture in a direction substantially perpendicular to the particular direction.

32. In a combination as set forth in claim 31 wherein the irregularities in the characteristics of the article include at least irregularities in the geometrical shape of the article and wherein

the irregularities in the characteristics of the fixture include at least irregularities in the geometrical shape of the fixture.

33. In a combination as set forth in claim 31 wherein the irregularities in the geometrical shape of the article include at least irregularities in the dimension of the article in the direction of the radiation from the source and wherein

the irregularities in the geometrical shape of the fixture include at least irregularities in the dimension of the fixture in the direction of the radiation from the source.

34. In a combination as set forth in claim 31 wherein
the article is moved past the radiation from the source at a substantially constant
speed within particular limits.

35. In a combination as set forth in claim 31 wherein
the article is one of a sequence of articles and the fixture is one of a sequence of
fixtures and the articles and the fixtures are moved in sequence past the radiation from the
source at a substantially constant speed within particular limits and wherein
the articles and the fixtures are moved in sequence past the radiation from the
source with a minimal separation between the articles within particular limits.

36. In combination for receiving radiation in a particular direction from a
radiation source,
an article having irregularities in its characteristics at different positions in the
article where the irregularities in the characteristics of the article cause irregularities to be
produced in the radiation dose received by the article from the radiation source at the
different positions, and

a fixture having characteristics of absorbing the radiation from the source at the different positions, in accordance with the energy characteristics of the article at the different positions, to provide substantially a uniformity in the radiation intensity at the different positions in the article within particular minimum and maximum limits.

37. In a combination as set forth in claim 36,
a source of radiation,
the fixture and the article being movable past the radiation from the source to receive radiation from the source.

38. In a combination as set forth in claim 36,
the fixture including a first fixture portion on one side of the article and a second fixture portion on the opposite side of the article, the first and second fixture portions being separated from each other in a direction corresponding to the direction of the radiation from the source.

39. In a combination as set forth in claim 37,

the article having irregularities in its characteristics at the different positions on opposite sides of the article and the fixture being provided with irregularities in its characteristics to compensate for the irregularities in the characteristics of the article and to provide substantially the uniformity in the radiation dosage at the different positions in the article within the particular minimum and maximum limits.

40. In a combination as set forth in claim 36,

the fixture being disposed on one side of the article and being provided with irregularities in its characteristics to compensate for the irregularities in the characteristics of the article on the opposite sides of the article and to provide substantially the uniformity in the radiation dosage at the different positions in the article within the particular minimum and maximum limits.

41. In a combination as set forth in claim 36,

the fixture including a first fixture portion on one of the opposite sides of the article and including a second fixture portion on the other of the opposite sides of the article, the first fixture portion having irregularities in its characteristics to compensate for

5 the irregularities in the characteristics of the article on the one of the opposite sides of the article and the second fixture portion having irregularities in the characteristics of the article on the other of the opposite sides of the article.

42. In combination for receiving radiation in a particular direction from a radiation source,

an article having irregularities in its characteristics at different positions in the article, and

a fixture disposed relative to the article and having irregularities in its characteristics for compensating for the irregularities in the characteristics in the article at the different positions to provide substantially a uniformity in the characteristics of the article within particular minimum and maximum limits.

43. In a combination as set forth in claim 42,

the article and the fixture being disposed relative to the radiation source to provide for the passage of the radiation from the source through the article and the fixture.

44. In a combination as set forth in claim 42,
the irregularities in the characteristics of the article including at least irregularities
in the geometrical shape of the article and the irregularities in the characteristics of the
fixture including at least irregularities in the geometrical shape of the fixture.